Announcement of Opportunity for Federal Funding

Overview

Agency Name: U.S. Environmental Protection Agency (EPA), Region 4

Funding Opportunity Title: Monitoring, Data Management, and Special Studies - South Florida Geographic Initiative, Water Quality Protection Program for the Florida Keys National Marine Sanctuary, and the Southeast Florida Coral Reef Initiative/Land-Based Sources of Pollution

Announcement Type: Request for Proposals (RFP)

Funding Opportunity Number: EPA-R4-WPD-2010-SFL

Catalog of Federal Domestic Assistance (CFDA) Number: 66.436 – Water Quality and Watershed Management: Surveys, Studies and Investigations; Grants and Cooperative Agreements; Section 104(b)(3) of the Clean Water Act

Dates: **The closing date and time for receipt of proposal submissions, regardless of mode of submission, is June 10, 2010, 5:00 p.m., Eastern Standard Time (EST). All hard copies of proposal packages must be received by the Agency Contact (See Section IV, PROPOSAL and SUBMISSION INFORMATION) by 5:00 P.M. EST, on June 10, 2010. Proposal packages submitted electronically via grants.gov must be received by 5:00 P.M. EST, on June 10, 2010. Late proposals will not be considered for funding. Questions regarding this RFP must be submitted in writing via e-mail and be received by the Agency Contact identified in Section VII Agency Contacts before June 1, 2010.**

Contents by Section:

Section I. Funding Opportunity Description

A. Funding Topics. Under this announcement, EPA is interested in proposals for the programs and topics described below. Applicants may submit multiple proposals under this announcement but each one must be for a different project.

1. Water Quality Protection Program for the Florida Keys National Marine Sanctuary

Background

The Florida Keys National Marine Sanctuary (FKNMS) was created with the signing of Public Law 101-605, the Florida Keys National Marine Sanctuary and Protection Act of 1990. Included in the Sanctuary are 2,900 square nautical miles of nearshore waters extending from Biscayne Bay to the Dry Tortugas. The 1990 Act directed EPA and the State of Florida, in consultation with the National Oceanic and Atmospheric Administration (NOAA), to develop a Water Quality Protection Program (WQPP) for the Sanctuary. The FKNMS is the first designated marine sanctuary required to have a WQPP.

Beginning in 1991, EPA and the State of Florida worked with NOAA and other federal, state, and local government agencies, university scientists, environmental groups, and the public to develop a WQPP for the Sanctuary. The "Final Water Quality Protection Program Document" was approved by the WQPP Steering Committee in September 1996 and contains the rationale and strategies to achieve the goals of the WQPP. The National Marine Sanctuaries Program Amendments Act of 1992 requires that EPA and the State of Florida implement the WQPP in cooperation with NOAA.

The purpose of the WQPP is to recommend priority corrective actions and compliance schedules addressing point and nonpoint sources of pollution to restore and maintain the chemical, physical, and biological integrity of the Sanctuary. This includes restoration and maintenance of a balanced, indigenous population of corals, shellfish, fish and wildlife, and recreational activities in and on the water. In addition, the Act requires the development of a comprehensive water quality monitoring program. EPA and the State of Florida have primary responsibility for implementing the comprehensive monitoring and special studies programs for the Sanctuary. EPA has provided the majority of funding for the monitoring activities and the special studies projects with assistance from NOAA, South Florida Water Management District, Florida Department of Environmental Protection (FDEP), Monroe County, and private environmental groups. This announcement concerns the monitoring and data management components of the WQPP that have been incorporated into the FKNMS's Science Plan.

Monitoring and Data Management Activities

A comprehensive status and trends monitoring program was established throughout the Sanctuary "to detect change". The objectives of the monitoring program are to evaluate the effectiveness of efforts to reduce or eliminate sources of pollution along with evaluating progress toward achieving and maintaining water quality, protecting and restoring the coral reefs, and

maintaining living resources of the Sanctuary. The long-term status and trends monitoring program, which includes water quality, coral reef and seagrass components was initiated in 1995 and is now in its fifteenth year. Scopes of work for existing monitoring projects are in Attachment I and are provided for your information. The WQPP also includes a geographic information system (GIS) based data management program which was developed by the Florida Marine Research Institute of the Florida Fish and Wildlife Conservation Commission. The long-term monitoring projects are conducted by Florida International University/Southeast Environmental Research Center (water quality and seagrass monitoring projects) and the Florida Fish and Wildlife Research Institute (coral reef monitoring project). The monitoring projects are funded via existing federal assistance agreements with EPA, Region 4.

- We seek proposals to continue the existing/ongoing long-term water quality, coral, and seagrass monitoring and data management projects.

Special Studies Projects

Special Studies assist in the identification and understanding of the processes that drive spatial and temporal changes occurring within the FKNMS ecosystem. We seek proposals addressing the goals and intent of the WQPP as described in the FKNMS Comprehensive Science Plan. To view additional high priority areas eligible for funding consideration, please refer to the FKNMS Comprehensive Science Plan at:
http://floridakeys.noaa.gov/research_monitoring/fknms_science_plan.pdf .

- **Investigate Methods of Improving Water Quality in Keys Canals**

Water quality in many canal systems is enriched by nutrients from stormwater, wastewater, and other sources. Water quality in canals is also a function of canal depth, length, and geometry. Physical improvements, such as culverts, flushing channels, filling, and sloping, may improve canal water quality.

- **Assess the Effects of Mosquito Control and Other Toxicants on Non-Target Organisms**

Preliminary evidence has shown that sprayed chemicals or their breakdown products occur in surface waters at concentrations that may be harmful to non-target species. The effect of sprays and larvicides on non-target organisms should be quantified.

- **Determining Cause and Effect of Coral Resiliency**

Examining how certain corals are capable of adapting to environmental stressors. More information is needed on physiological adaptations, intra- and interspecific differences, habitat related differences, and synergistic effects, including possible genetic factors.

- **Microbial Source Tracking of Bacteria in Canals and Nearshore Waters**

Identification and quantification fecal bacteria sources from wild and domestic animals,

malfunctioning septic tanks, stormwater controls and municipal waste to reduce beach closures and improve water quality in area canals.

2. Southeast Florida Coral Reef Initiative/Land-Based Sources of Pollution

Background

In 1998, The U.S. Coral Reef Task Force (USCRTF) was established by Presidential Executive Order #13089 to lead U.S. efforts to preserve and protect coral reef ecosystems. In October 2002, the USCRTF passed a resolution to improve implementation of the National Action Plan to conserve coral reefs. Among other things, the resolution identified six focus areas for priority action (land-based sources of pollution, over fishing, lack of public awareness, recreational overuse and misuse, climate change and coral bleaching, and disease) and recommended development of local action strategies (LASs) for relevant focus areas. The development of LASs to improve coordinated implementation of coral reef conservation was a centerpiece of the resolution. The LAS is intended as a 3-year road map for collaborative action to address key threats to coral reefs and is strategic rather than comprehensive, focusing on a few specific issues in a well-defined geographic area.

In May 2003, an interagency group (federal, state, regional, and local governments) of resource professionals familiar with the southeast Florida coral reef ecosystem north of the Florida Keys met in southeast Florida to begin developing local action strategies. The LAS for coral reef conservation and management in southeast Florida was finalized in December 2004 and includes the following focus areas: land-based sources of pollution; fishing, diving and other uses; maritime industry and coastal construction impacts; and awareness and appreciation. EPA Region 4 staff works closely with representatives of the Florida Department of Environmental Protection to coordinate and facilitate the activities of the land-based sources of pollution (LBSP) focus team. The LBSP focus team and associated technical advisory committee (TAC) are composed of representatives from various government agencies, universities, NGOs, and the general public and has developed a LAS to reduce the impacts of land-based sources of pollution to the coral reef habitat in coastal waters of Dade, Broward, Palm Beach, and Martin Counties, Florida. The goals of the LAS for LBSP are as follows: characterize the existing condition of the coral reef ecosystem; quantify, characterize and prioritize the land-based sources of pollution that need to be addressed based on identified impacts to the coral reef community; identify how pollution affects the southeast Florida coral reef ecosystem; reduce the impacts of land-based sources of pollution to the coral reef ecosystem; and increase public awareness and understanding of the effects of land-based sources of pollution on water quality and coral reef habitat. The LBSP focus team developed action strategies or projects for each goal and the LBSP TAC developed conceptual scopes of work for the projects and prioritized the work effort.

Special Studies Projects

The goals of the special studies program are to: 1. Quantify, characterize, and prioritize the land-based sources of pollution that need to be addressed based on identified impacts to the coral reef ecosystem; and 2. Identify how land-based sources of pollution affect southeast Florida coral reef

ecosystems. Special studies projects must address at least one of the priority topics listed below.

Priority Topics for Special Studies

- **Identification of Sources and Signals of Land-based Pollution in Southeast Florida Reefs**

Coral reef communities in southeast Florida are downstream from a range of potential pollution streams including land-based sources such as agricultural runoff, sewage outfalls, and storm water. There is insufficient information to definitively link degradation of coral reef habitat with land-based sources of pollution. Demonstration of indicators of land-based pollutants in reef organisms is a necessary step in establishing this definitive link. We seek proposals to investigate chemical or biological tracers in reef organisms to evaluate exposure to land-based pollutants. Examples might include stable isotopes or microbiological tracers. It would be especially valuable to demonstrate changes in exposure over time as well as present exposure.

- **Linking Ecological Performance to Pollutant Exposure**

In order to definitively link coral reef degradation with land-based sources of pollution in southeast Florida (Miami-Dade, Broward, Palm Beach, and Martin Counties), it is necessary to demonstrate that pollutant exposure at quantifiable levels affects the ecological performance of reef organisms, populations, or communities. We seek proposals to demonstrate effects of pollutants on organisms. Such effects may include physiological, organism level (e.g. growth, fecundity) or population level responses. Experimental studies that can demonstrate cause-effect relationships would be particularly valuable.

- **Populations of Invasive Coral Species: Investigating the Ecological Impacts and Source of Invasion**

Examining the ecologically and genetically monitor target *Tubastraea coccinea* populations (orange cup coral, an invasive coral species) in natural areas and artificial reefs in South Florida and within the FKNMS. We seek proposals to provide fundamental information on the population biology of a species that may pose a threat to the health and biodiversity of Florida coral reef ecosystems.

B. Linkage of Projects to EPA's Strategic Plan and Anticipated Outputs

1. Linkage to Strategic Plan

The monitoring projects, data management, and special studies included in this announcement of the federal funding opportunity support EPA's 2006-2011 Strategic Plan, Goal 4: "Healthy Communities and Ecosystems - Protect, sustain, or restore the health of people, communities, and ecosystems using integrated and comprehensive approaches and partnerships"; Objective 4.3: "Restore and Protect Critical Ecosystems - Protect, sustain, and restore the health of critical natural habitats and ecosystems"; and Sub-objective 4.3.7: "Restore and Protect the South Florida Ecosystem - Protect and maintain the south Florida ecosystem, including the Everglades

and coral reef ecosystems."

2. Outputs/Outcomes

In compliance with EPA Order 5700.7 on environmental results, EPA-funded projects must address outputs and/or outcomes and how these will be tracked and measured. Outputs refer to activities and work products that contribute to producing environmental outcomes. Outputs may be quantitative or qualitative but must be measurable during the funding period. Outcomes refer to the results, effects, or consequences that will occur from carrying out activities. Outcomes are always quantitative. Examples of outputs for projects associated with this announcement include:

- Evaluation of the effectiveness of efforts to reduce or eliminate sources of pollution and to evaluate progress toward achieving and maintaining water quality and protecting and restoring coral reef habitat and other living resources.

- Characterization of sources and causes of water quality impairment within a watershed that will allow the development of management/action/restoration plan(s).

- Preparation and timely delivery of quarterly and draft/final project reports that document results of the special study or monitoring project.

Examples of expected outcomes that may occur because of the technical/scientific information generated by the monitoring and special studies projects associated with this announcement include:

- Increase knowledge of managers and elected officials concerning negative impacts of pollutants on water quality and living biological resources, which should lead to the development and implementation of action plans that will reduce pollutant loading and result in the conservation of natural resources.

- Maintenance and/or improvement of water quality.

- Maintenance of health of seagrass beds.

- Restoration and/or maintenance of coral reef habitat.

- Reduce pollutant loading to inland, nearshore and coastal waters.

C. Funding Authority

EPA Region 4 will award the funds associated with this announcement under the authority of Section 104(b)(3) of the Clean Water Act, which authorizes federal assistance agreements for conducting or promoting the coordination and acceleration of research, investigations, experiments, training, demonstrations, surveys and studies relating to the causes, effects, extent,

prevention, reduction and elimination of pollution.

Section II. Award Information

A. Total Amount Expected to be Awarded

EPA Region 4 anticipates receiving approximately $1,400,000 of FY 2010 money to fund the comprehensive monitoring projects (water quality, coral reef, and seagrass) and the data management program for the FKNMS.

EPA may receive approximately $150,000 of FY 2010 money that could be used to fund special studies for the Water Quality Protection Program and the Southeast Florida Coral Reef Initiative/Land-Based Sources of Pollution Program. Additional funds may be available from the FY 2011 annual appropriation. The total amount of funding and awards that will be made under this announcement will depend on funding availability, the quality of proposals received, and other applicable considerations.

B. Anticipated Number of Awards

EPA anticipates making a total of six awards under this announcement. One award for each of the monitoring projects (water quality, coral reef, and seagrass) and one award for the data management program. If funds are available, NOAA will provide a portion of the funding for the coral reef and seagrass monitoring projects. The number of awards for special studies will depend on the budgets of the full proposals submitted.

C. Amount of Individual Awards

The award amount for the monitoring and data management projects will be based upon the scopes of work for each individual project and the total budget for each project can not exceed the anticipated FY 2011 annual project budget (see list below) for monitoring and data management projects. The goal is to continue the existing status and trends monitoring projects and the data management project.

<u>Anticipated FY 2011 Annual Budgets</u>

Water Quality Monitoring - $580,000
Coral Reef Evaluation and Monitoring - $380,000
Seagrass Monitoring - $280,000
Data Management - $60,000
Special Studies Projects not to Exceed $100,000

Final decisions on the amount of each award will be dependent on sufficient funding in EPA's annual appropriation and the amount of funds made available to the South Florida Geographic Initiative, WQPP for the FKNMS, and Southeast Florida Coral Reef Initiative/Land-Based Sources of Pollution Program and the quality of proposals received.

Unless pre-award costs are specifically approved by EPA, recipients should not incur project costs, including nonfederal match, until they receive an award offer from EPA.

D. Anticipated Start and End Dates

Federal assistance agreements for the monitoring and data management projects will be awarded for two years, FY 2010 and FY 2011, with the project and budget periods beginning on or about October 1, 2010 and ending on September 30, 2012. Federal assistance agreements for the special studies projects will be awarded for FY 2011 with the project and budget periods beginning on or about October 1, 2010. However, special studies may cover one or two years and therefore, the project and budget periods may end on September 30, 2011, or September 30, 2012.

E. Type of Assistance

Accepted proposals submitted by non-federal applicants will be funded via federal assistance agreements in the form of a grant or cooperative agreement. For most projects associated with the WQPP for the FKNMS, a cooperative agreement is the preferred funding mechanism. The principal purpose of the federal and non-federal relationship established by a cooperative agreement is the transfer of money to the recipient to accomplish a "public purpose" of support or stimulation; in addition, there will be substantial involvement between the federal agency and the recipient during performance of the activity, establishing the agency as a "partner" during performance.

EPA reserves the right to reject all proposals and make no awards under this announcement or make fewer than expected. In appropriate circumstances, EPA reserves the right to partially fund proposals/applications by funding discrete portions or phases of proposed projects. If EPA decides to partially fund a proposal/application, it will do so in a manner that does not prejudice any applicants or affect the basis upon which the proposal/application, or portion thereof, was evaluated and selected for award, and therefore maintains the integrity of the competition and selection process.

Section III. Eligibility Information

A. Eligible Applicants

Assistance under this program is generally **available to** States, territories, Indian Tribes, and possessions of the U.S. (including the District of Columbia); public and private universities and colleges; hospitals; laboratories; and other public or private nonprofit institutions and individuals. Nonprofit organizations described in Section 501(c)(4) of the Internal Revenue Code that engage in lobbying activities as defined in Section 3 of the Lobbying Disclosure Act of 1995 **are not eligible to apply**.

B. Cost Sharing or Match

There is no required match. However, EPA encourages leveraging which will be evaluated in

Section V.

C. Threshold Criteria

Proposals from eligible applicants must meet these requirements or else they will be rejected. Applicants deemed ineligible for funding consideration as a result of the threshold eligibility review will be notified within 15 calendar days of the ineligibility determination.

- Proposed projects for the monitoring and data management projects can not exceed the anticipated FY 2011 annual project budget (see list in Section II C) for monitoring and data management projects.

- Proposals for the special studies projects must address at least one of the priority topics described in Section I and must not exceed a total of $100,000 per proposal.

- Proposals must substantially comply with the proposal submission instructions and requirements set forth in Section IV of this announcement or else they will be rejected. However, where a page limit is expressed in Section IV with respect to the proposal, pages in excess of the page limitation will not be reviewed.

- Proposals must be received by the EPA or received through **www.grants.gov,** as specified in Section IV of this announcement, on or before the submission deadline published in Section IV of this announcement. Applicants are responsible for ensuring that their proposal reaches the designated person/office specified in Section IV of the announcement by the submission deadline.

- Proposals received after the submission deadline will be considered late and returned to the sender without further consideration unless the applicant can clearly demonstrate that it was late due to EPA mishandling. For hard copy submissions, where Section IV requires proposal receipt by a specific person/office by the submission deadline, receipt by an agency mailroom is not sufficient. Applicants should confirm receipt of their proposal with Ms. Morgan Jackson as soon as possible after the submission deadline—failure to do so may result in your proposal not being reviewed.

Section IV. Proposal and Submission Information

A. Proposal

In order to simplify the review process, obtain the maximum degree of comparison, and provide a fair and equitable evaluation of proposals, reviewers will rely on the content of the full proposal for evaluation purposes. Therefore, it is important that all full proposals are complete and adhere to the standard format that is described in detail in Section VIII . Each proposal must consist of the following components:

1. Proposal Submission Checklist (Attachment B)
2. Proposal Cover Sheet (Attachment C)
3. Budget Information (Budget Summary and EPA Standard Form 424A)

Attachments B & C includes forms to be completed and signed where appropriate. Instructions are provided as an attachment to this announcement. All forms, including the budget sheet should be attached at the beginning of the proposal.

Proposal text must be no greater than twelve single spaced pages (minimum, 12 point Times New Roman font) including tables and figures, but not literature cited – excess pages will not be reviewed. The full proposal text shall contain the following text sections:

A. Introduction
   1. Situation, Need and Previous Efforts
   2. Objectives
   3. Application, Benefits and Importance

B. Methods and Approach
   1. Description of Major Tasks
   2. Environmental Impact
   3. Future Efforts

C. Project Management
   1. Administration
   2. Roles and Assignments
   3. Biographies and Qualifications

D. Support Requirements and Conditions
   1. Cooperation from Other Organizations
   2. Data and/or Facility Access

E. Results/Outputs and Deliverables
   1. Quarterly Progress Reports
   2. Final Report
   3. Plan and Schedule for Tracking Deliverable Items

F. Literature Cited

G. Budget Information
   1. Summary, Including Co-Funding
   2. EPA Form (SF 424A)

H. Biographies and Qualifications

I. Past Performance and Programmatic Capability

J. Leveraging

K. Appendices (maximum of three pages)

Attachment A contains further definition of the above sections, including suggested format, length, organization, and content for each section.

B. Proposal Submission

Applicants have the following options to submit their proposals: 1) Hard copy by express delivery service to the specified EPA contact below, or 2) electronically through grants.gov. Proposals will not be accepted via fax or standard 1st class mail delivery by U.S. Postal Service. All proposals must be prepared, and include the information, as described above and in Attachment A)

1. Hard Copy Submission of Proposal

Proposals must be signed by an official representing the applicant's institution or employer. As stated above, five copies (if submitted by hard copy) of the proposal package must be received by the EPA Region 4 contact listed below or through grants.gov no later than June 10, 2010. Please send each of the proposal copies to the appropriate individual listed below.

Hard Copy via Express Delivery (FedEx, UPS, DHL, USPS, etc)

Ms. Morgan Jackson
U.S. Environmental Protection Agency
Water Protection Division
Wetlands, Coastal and Oceans Branch
61 Forsyth Street, S.W.
Atlanta, GA 30303-3104
Phone: (404) 562-9393

Hard Copy Proposal Submission Deadline

All hard copies of proposal packages must be received by Ms. Morgan Jackson by 5:00 P.M., EST, on June 10, 2010.

2. Electronic Submission of Proposal

If you wish to submit your proposal electronically via Grants.gov, please follow the appropriate instructions below. Applicants may submit their initial proposal materials electronically through http://www.grants.gov.

If you wish to apply electronically via Grants.gov, the electronic submission of your initial proposal must be made by an official representative of your institution who is registered with Grants.gov and authorized to sign applications for Federal assistance.

For more information, go to http://www.grants.gov and click on "Get Started," and then click on "For AORs" (Authorized Organization Representative) on the left side of the page. *Note that the registration process may take a week or longer to complete.* If your organization is not currently registered with Grants.gov, please encourage your office to designate an AOR and ask that individual to begin the registration process as soon as possible.

To begin the proposal process under this grant announcement, go to http://www.grants.gov and click on the "Apply for Grants" tab on the left side of the page. Then click on "Apply Step 1: Download a Grant Application Package" to download the compatible Adobe viewer and obtain the application package. **To apply through grants.gov you must use Adobe Reader applications and download the compatible Adobe Reader version available to download for free on the Grants.gov website. For more information on Adobe Reader please visit the Help section on grants.gov at** http://www.grants.gov/help/help.jsp or http://www.grants.gov/aboutgrants/program_status.jsp).

Proposal materials submitted through grants.gov will be time/date stamped electronically. Please be sure to view the additional instructions for applying electronically under this announcement through use of grants.gov that are attached as **Attachment D**. If you have any technical difficulties while applying electronically, please refer to http://www.grants.gov/CustomerSupport.

C. Confidential Business Information

In accordance with 40 CFR 2.203, applicants may claim all or a portion of their application/proposal as confidential business information. EPA will evaluate confidentiality claims in accordance with 40 CFR Part 2. Applicants must clearly mark applications/proposals or portions of applications/proposals they claim as confidential. If no claim of confidentiality is made, EPA is not required to make the inquiry to the applicant otherwise required by 40 CFR 2.204(c)(2) prior to disclosure. However, the agency considers competitive proposals/applications confidential and protected from disclosure prior to the completion of the competitive selection process.

D. Communications with Applicants

In accordance with EPA's Assistance Agreement Competition Policy (EPA Order 5700.5A1), EPA staff will not meet with individual applicants to discuss draft proposals, provide informal comments on draft proposals, or provide advice to applicants on how to respond to ranking criteria. Applicants are responsible for the contents of their applications/proposals. However, EPA will respond to questions in writing from individual applicants regarding threshold eligibility criteria, administrative issues related to the submission of the proposal, and requests for clarification about the announcement.

E. Management Fees

When formulating budgets for proposals/applications, applicants must not include management fees or similar charges in excess of the direct costs and indirect costs at the rate approved by the applicants cognizant audit agency, or at the rate provided for by the terms of the agreement negotiated with EPA. The term "management fees or similar charges" refers to expenses added to the direct costs in order to accumulate and reserve funds for ongoing business expenses, unforeseen liabilities, or for other similar costs that are not allowable under EPA assistance agreements. Management fees or similar charges may not be used to improve or expand the project funded under this agreement, except to the extent authorized as a direct cost of carrying out the scope of work.

F. Contracts and Subawards

a. Can funding be used for the applicant to make subawards, acquire contract services, or fund partnerships?

EPA awards funds to one eligible applicant as the recipient even if other eligible applicants are named as partners or co-applicants or members of a coalition or consortium. The recipient is accountable to EPA for the proper expenditure of funds.

Funding may be used to provide subgrants or subawards of financial assistance, which includes using subawards or subgrants to fund partnerships , provided the recipient complies with applicable requirements for subawards or subgrants including those contained in 40 CFR Parts 30 or 31, as appropriate. Applicants must compete contracts for services and products, including consultant contracts, and conduct cost and price analyses, to the extent required by the procurement provisions of the regulations at 40 CFR Parts 30 or 31, as appropriate. The regulations also contain limitations on consultant compensation. Applicants are not required to identify subawardees/subgrantees and/or contractors (including consultants) in their proposal/application. However, if they do, the fact that an applicant selected for award has named a specific subawardee/subgrantee, contractor, or consultant in the proposal/application EPA selects for funding does not relieve the applicant of its obligations to comply with subaward/subgrant and/or competitive procurement requirements as appropriate. Please note that applicants may not award sole source contracts to consulting, engineering or other firms assisting applicants with the proposal solely based on the firm's role in preparing the proposal/application.

Successful applicants cannot use subgrants or subawards to avoid requirements in EPA grant regulations for competitive procurement by using these instruments to acquire commercial services or products from for-profit organizations to carry out its assistance agreement. The nature of the transaction between the recipient and the subawardee or subgrantee must be consistent with the standards for distinguishing between vendor transactions and subrecipient assistance under Subpart B Section .210 of OMB Circular A-133 , and the definitions of subaward at 40 CFR 30.2(ff) or subgrant at 40 CFR 31.3, as applicable. EPA will not be a party to these transactions. Applicants acquiring commercial goods or services must comply with the competitive procurement standards in 40 CFR Part 30 or 40 CFR Part 31.36 and cannot use a subaward/subgrant as the funding mechanism.

b. How will an applicant's proposed subawardees/subgrantees and contractors be considered during the evaluation process described in Section V of the announcement?

Section V of the announcement describes the evaluation criteria and evaluation process that will be used by EPA to make selections under this announcement. During this evaluation, except for those criteria that relate to the applicant's own qualifications, past performance, and reporting history, the review panel will consider, as appropriate and relevant, the qualifications, expertise, and experience of:

> An applicant's named subawardees/subgrantees identified in the proposal/application if the applicant demonstrates in the proposal/application that if it receives an award that the subaward/subgrant will be properly awarded consistent with the applicable regulations in 40 CFR Parts 30 or 31. For example, applicants must not use subawards/subgrants to obtain commercial services or products from for profit firms or individual consultants. (ii) an applicant's named contractor(s), including consultants, identified in the proposal/application if the applicant demonstrates in its proposal/application that the contractor(s) was selected in compliance with the competitive Procurement Standards in 40 CFR Part 30 or 40 CFR 31.36 as appropriate. For example, an applicant must demonstrate that it selected the contractor(s) competitively or that a proper non-competitive sole-source award consistent with the regulations will be made to the contractor(s), that efforts were made to provide small and disadvantaged businesses with opportunities to compete, and that some form of cost or price analysis was conducted. EPA may not accept sole source justifications for contracts for services or products that are otherwise readily available in the commercial marketplace.
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> EPA will not consider the qualifications, experience, and expertise of named subawardees/subgrantees and/or named contractor(s) during the proposal/application evaluation process unless the applicant complies with these requirements.

Section V. Proposal Review Information

Only eligible entities whose proposal(s) meet the threshold criteria in Section III of this announcement will be reviewed according to the evaluation criterion set forth below. Applicants should explicitly address this criterion as part of their proposal package submittal. Each proposal will be rated under a points system, with a total of 100 points possible.

A. Evaluation Criteria

Proposals will be evaluated by reviewers based on the following criteria:

- Rationale - how well the proposed project addresses program goals and objectives as described in Section I of the announcement and/or existing scopes of work for ongoing monitoring projects (**15 points**).

- Scientific Merit - how well the project advances the state of the science and our knowledge and the design of the scientific program (**15 points**).

- Feasibility - ability of the project to be successfully completed within the time frames discussed in this announcement and other constraints (**15 points**).

- Environmental Results: Outputs, Outcomes and Tracking – proposals will be evaluated based on how well the proposal demonstrates the following:

    - Description of outputs (products) expected to be achieved by this project.
    - Description of outcomes (objectives) expected to be achieved by this project.
    - Extent to which the applicant demonstrates that their proposed project's objectives/outcomes are related to EPA's Strategic Plan Goal of Healthy Communities and Ecosystems/Restore and Protect Critical Ecosystem/Restore and Protect the South Florida Ecosystem (Goal 4, Objective 4.3, Sub-objective 4.3.7) (**15 points**).

- Relevance to Resource Management - degree to which approaches and anticipated results/outputs can be applied to identifying and solving problems in resource management (**10 points**).

- Past Performance and Qualifications of Investigators and Sufficient Laboratory Capabilities - under this criterion, applicants will be evaluated based on their ability to successfully complete and manage the proposed project taking into account the applicant's: (i) past performance in successfully completing and managing federally funded assistance agreements (assistance agreements include Federal grants and cooperative agreements but not Federal contracts) similar in size, scope, and relevance to the proposed project performed within the last 3 years, (ii) history of meeting reporting requirements under federally funded assistance agreements (assistance agreements include Federal grants and cooperative agreements but not Federal contracts) similar in size, scope, and relevance to the proposed project performed within the last 3 years and submitting acceptable final technical reports under those agreements, (iii) organizational experience and plan for timely and successfully achieving the objectives of the proposed project, and (iv) staff expertise/qualifications, staff knowledge, and resources or the ability to obtain them, to successfully achieve the goals of the proposed project. Note: In evaluating applicants under this criterion, the Agency will consider the information provided by the applicant and may also consider relevant information from other sources including agency files and prior/current grantors (e.g., to verify and/or supplement the information supplied by the applicant). Applicants with no relevant or available past performance or reporting history (items i and ii above), will receive a neutral score (1.25 points) for those elements of this criterion (**10 points-2.5 points for each subfactor**).

- Budget - whether the proposed budget is reasonable and adequate to carry out proposed project (**10 points**).

- Environmental Results Past Performance - under this criterion, applicants will be evaluated based on the extent and quality to which they adequately documented and/or reported on their progress towards achieving the expected results (e.g., outcomes and

outputs) under Federal agency assistance agreements (assistance agreements include Federal grants and cooperative agreements but not Federal contracts) performed within the last three years, and if such progress was not being made whether the applicant adequately documented and/or reported why not. Note: In evaluating applicants under this factor, EPA will consider the information provided by the applicant and may also consider relevant information from other sources including agency files and prior/current grantors (e.g., to verify and/or supplement the information supplied by the applicant). Applicants with no relevant or available past performance reporting history will receive a neutral score for this factor (**5 points**).

- Leveraging – under this criteria, applicants will be evaluated based on the extent they demonstrate (i) how they will coordinate the use of EPA funding with other federal and/or non-federal sources of funds to leverage additional resources to carry out the proposed project(s) and/or (ii) that EPA funding will compliment activities relevant to the proposed project(s) carried out by the applicant with other sources of funds or resources. Applicants may use their own funds or other resources for a voluntary match or cost share if the standards at 40 CFR 30.23 or 40 CFR 31.24, as applicable, are met. Only eligible and allowable costs may be used for matches or cost shares. Other Federal grants may not be used as matches or cost shares without specific statutory authority (e.g. HUD's Community Development Block Grants). Any form of proposed leveraging that is evaluated under a Section V ranking criteria must be included in the proposal and the proposal must describe how the applicant will obtain the leveraged resources and what role EPA funding will play in the overall project. If the Florida Legislature appropriates funds, FDEP may provide a grant under its own authority to a recipient for the funding for the water quality monitoring project that would be counted as leveraging (**5 points**).

B. Review and Selection Process

Proposals will first be evaluated against the threshold factors listed in Section III. Only those proposals which meet all of the threshold factors will be evaluated using the evaluation criteria list above by an EPA evaluation team. Each proposal will be given a numerical score and will be rank-ordered according to the numerical score. Preliminary funding recommendations will be provided to the Approving Official based on this ranking.

Proposals will be reviewed by a panel of EPA staff.

All reviewers will be required to sign a conflict of interest statement. Reviewers who have a conflict of interest will be removed from the review panel.
Final funding decisions will be made by the Approving Official based on the rankings and preliminary recommendations of the EPA evaluation team. In making the final funding decisions, the Approving Official may also consider programmatic priorities. It is intended that federal assistance agreements will be awarded during the fourth quarter of FY 2010 with project and budget periods to begin on the first day of FY 2011 (October 1, 2010) or as soon as possible thereafter.

Potential applicants should be aware that the monitoring and data management proposals

will be evaluated and ranked separately from proposals for special studies. Proposals for monitoring and data management will be evaluated and ranked as a group and proposals for special studies will be evaluated and ranked as a group.

Section VI. Award Administration Information

A. Application for Federal Assistance

If a proposal is selected for funding, the applicant will be contacted by EPA Region 4 staff by around July 1, 2010, and required to submit a final project workplan to Region 4 no later than around July 15, 2010.

B. Award Notice

Formal EPA approval of the Application for Federal Assistance and workplan will be made in the form of a written offer of a federal assistance agreement, most likely a cooperative agreement. Costs incurred prior to the award date will not be reimbursed by EPA unless specifically approved in the assistance agreement. EPA cannot make any payments to the award recipient until we receive an executed assistance agreement from the recipient. Payments will generally be made on a reimbursable basis.

C. Intergovernmental Reviews

The funds associated with this announcement require Executive Order (E.O.) 12372, Intergovernmental Review of Federal Programs", review. E.O. 12372 structures the federal government's system of consultation with state and local governments on its decisions involving grants, other forms of financial assistance, and direct development. Under E.O. 12372, states, in consultation with their local governments, design their own review processes and select the federal financial assistance and direct development activities they wish to review. If selected for funding, the recipient of the federal assistance agreement will be required to send a copy of their application and proposal to the appropriate State Clearinghouse Office for an intergovernmental review.

D. DUNS Number

All applicants **are required** to provide a Dun and Bradstreet (D&B) Data Universal Numbering System (DUNS) number when applying for a Federal grant or cooperative agreement. Applicants can receive a DUNS number, at no cost, by calling the dedicated toll-free DUNS Number request line at 1-866-705-5711, or visiting the D&B website at: http://www.dnb.com.**.**

E. Administrative and National Policy Requirements

State and Local Governments and Tribes: *40 CFR Part 31, Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments, or* Institutions of Higher Education and Other Nonprofit Organizations: *40 CFR Part 30, Uniform*

Requirements for Grants and Cooperative Agreements with Institutions of Higher Education, Hospitals, and other Nonprofit Organizations.

EPA uses the following guidelines in determining costs applicable to federal assistance agreements:

> For Educational Institutions: *OMB Circular A-21, Cost principles for Educational Institutions (relocated to 2 CFR Part 220).*
>
> For State and Local Governments and Indian Tribes: *OMB Circular A-87, Cost Principles for State, and Local and Indian Tribal Governments (relocated to 2 CFR Part 225).*
>
> For Nonprofit Organizations: *OMB Circular A-122, Cost Principles for Nonprofit Organizations (relocated to 2 CFR Part 230)*

A listing and description of general EPA Regulations applicable to the award of assistance agreements may be viewed at:

http://www.epa.gov/ogd/AppKit/applicable_epa_regulations_and_description.htm

F. Disputes: Assistance agreement competition-related disputes will be resolved in accordance with the dispute resolution procedures published in 70 FR (Federal Register) 3629, 3630 (January 26, 2005) which can be found at : http://www.epa.gov/ogd/competition/resolution.htm . Copies of these procedures may also be requested by contacting Steve Blackburn at (404) 562-9397, or email at blackburn.steven@epa.gov.

G. Nonprofit Administrative Capability Clause: Non-profit applicants that are recommended for funding under this announcement are subject to pre-award administrative capability reviews consistent with Section 8b, 8c and 9d of EPA Order 5700.8 - Policy on Assessing Capabilities of Non-Profit Applicants for Managing Assistance Awards (http://www.epa.gov/ogd/grants/award/5700_8.pdf). In addition, non-profit applicants that qualify for funding may, depending on the size of the award, be required to fill out and submit to the Grants Management Office the Administrative Capabilities Form with supporting documents contained in Appendix A of EPA Order 5700.8.

H. Reporting Requirements

Quarterly reports will be required for monitoring projects and special studies. The federal assistance agreement recipient shall provide quarterly reports to the EPA project officer. The reports shall consist of updates on progress toward work objectives, justification, approach, results to date, any problems encountered, actions taken to resolve problems, discussion of remaining tasks, and expenditures to date. Quarterly reports will be due within 45 days after the end of each quarter.

Recipients of federal assistance agreements will be required to submit a draft final report that summarizes the objectives, methods, approach, results, and significance of each project or study.

The draft final report will be reviewed by the EPA project officer and returned with comments. The recipient of the federal assistance agreement will address the comments and submit a final report to the EPA project officer with revisions. The final report will be due within six months of the completion of the project.

I. Quality Assurance/Quality Control

Recipients of federal assistance agreements will be required to develop and submit a Quality Assurance Project Plan (QAPP) to the EPA project officer. Approval of the QAPP is required before work can begin or any data can be collected. Through the plan, the recipient explicitly commits to incorporating procedures that will reduce and maintain random and systematic errors within specified tolerable limits. In addition, the recipient of a federal assistance agreement will document quality control procedures and evaluate the quality of the data being produced. Plans should include or refer to a description of safety, training and equipment maintenance. Data quality objectives will be developed to ensure the utility of data for the applications. The QAPP will be prepared according to the format prescribed in "EPA requirements for Quality Assurance Project Plans for Environmental Data Operations, EPA OA/R-5". The recipient should develop the QAPP in close coordination with the EPA Region 4 QA/QC Officer and the EPA project officer. If requested, EPA will provide a QAPP on file with Region 4 to assist recipients with preparation of their QAPPs.

J. Data Management

Under cooperative agreements with EPA Region 4 and NOAA/FKNMS, the Florida Fish and Wildlife Research Institute (FWRI) manage a data management plan and data management system for the monitoring and special studies programs associated with the FKNMS. Each recipient of a federal assistance agreement for monitoring and special studies projects will work with the designated data management entity to define data entry conventions and issues. All original and ancillary data produced under the monitoring and special studies programs will be generated, processed, stored and archived in a manner that provides detailed documentation of the procedures used during all stages of data collection, reduction, processing, analysis, and storage.

K. Publications

Recipients of federal assistance agreements for special studies are expected to submit manuscripts on the funded projects to appropriate scientific journals within one year of the completion of the final report. Recipients of federal assistance agreements for monitoring projects are expected to submit manuscripts to appropriate scientific journals at an appropriate time during and/or after the completion of the project. The appropriate time for submission of manuscripts will be negotiated with the EPA project officer. Authors are expected to cite support from the specific sponsor of their project or study in all publications resulting wholly or partially from sponsored activities. For example, an appropriate acknowledgment would be as follows:

"This project/study was funded by a federal assistance agreement from the U.S. Environmental Protection Agency pursuant to assistance Number _____."

Reprints of any abstract, article or other publication that result from this sponsored project /study should be sent to the EPA project officer.

L. Public Relations

Official press releases on the monitoring and special studies projects may be prepared by EPA Region 4 and/or FKNMS staff to be used by all recipients of federal assistance agreements for distribution to the news media. Principal investigators are not prohibited from discussing their projects with news media; however, principal investigators should notify their EPA project officer of any contacts with the news media regarding monitoring and special studies projects funded via federal assistance agreements.

Section VII. Agency Contact

If you have any questions concerning this announcement of opportunity for federal funding and proposals, please contact Ms. Morgan Jackson at (404) 562-9393, email at Jackson.morgan@epa.gov.

Section VIII. Other Information

ATTACHMENT A

GUIDELINES FOR PREPARATION OF PROPOSALS SUBMITTED FOR PROJECTS

Five copies of each proposal must be provided. The original signed copy should be single sided, but the other fourteen copies can be double sided. All copies should be punched for inclusion in a standard three-ring binder. The entire proposal must be printed in 12 point type. The proposal text must be no longer than **12 single-spaced pages.** Proposal content should be succinct, unambiguous, and descriptive. Full proposals that do not meet these criteria may be returned unreviewed.

I. Proposal Check-List, Applicant Agreement, and Proposal Cover Sheet

Append the following forms, included as attachments, to the front of the proposal text: 1) the Proposal Submission Check-list; 2) the Applicant Agreement, appropriately signed and dated; and 3) the Proposal Cover Sheet completely filled out and signed by the appropriate authorities.

II. Project Summary (1 page maximum recommended)

A Project Summary must be filled out by the respondent/principal investigator and inserted immediately behind the Proposal Cover Sheet.

III. Proposal Text (12 pages maximum)

A. Introduction

1. Situation, Need, and Previous Efforts - Discuss notable gaps in knowledge or capabilities, why the proposed project should be performed, review significant work by yourself or by others in the proposed area of interest (include reference citations).

2. Objective(s) - State what is to be studied, measured, observed, or developed, and the anticipated results. State hypotheses that the proposed special study is designed to test.

3. Applications, Benefits, and Importance - Describe how the anticipated results relate to the goals/objectives of the Local Action Strategy for the Land-Based Sources of Pollution of the Southeast Florida Coral Reef Initiative, the expected benefits, and their utility.

B. Methods and Approach

1. Description of Major Tasks - Divide the proposed effort into a meaningful set of tasks that must be performed to accomplish the objective(s) and describe each task. State the tasks in the same order as the hypotheses they are designed to test. Experimental design must be described with statistical tests, if applicable, for hypotheses proposed.

2. Environmental Impact - State and explain any possible impact that your project will have on the environment, including the type and duration of such changes. List in as much detail as possible the number of samples and species needed for your study. Document the need for sampling and objectively discuss potential impacts.

3. Future Efforts - If there are future efforts that should be performed in order for your project to be meaningful, or of major significance, please describe briefly the type, extent, and timing of those efforts. Is this a multi-year project? If possible, the individual parts (i.e., each year's effort) should stand alone.

C. Project Management

1. Administration - Describe the administrative responsibilities and authority of the Principal Investigator.

2. Roles/Assignments and Participation Time - Describe the team composition (including names and affiliations of key individuals) and the assignments of team members to major tasks. Provide specific estimates of the time (in hours, days, etc., not percent) that each member will work on the project.

D. Support Requirements and Conditions

1. Cooperation From Other Organizations - If a clearance or permit(s) from any government agency is required for execution of the project, please provide the name of the agency, the method of obtaining the clearance or permit, and the time required or state "none".

2. **Data or Facility Access** - If access is required to data or facilities held by another organization, please identify the data or facility, the nature and type of access required, the methods of obtaining such access, and the effect of being denied access or state "none".

E. Results/Outputs and Deliverables

Two types of reports are required from principal investigators.

1. Quarterly Progress Reports - The principal investigator shall provide quarterly progress reports to the Project Officer. These reports will consist of updates on progress toward work objectives, justification, approach, results to date, any problems encountered, actions taken to resolve problems, discussion of remaining tasks, and expenditures to date. Quarterly reports will be due within 45 days after the end of each quarter.

2. Final Report - Principal investigators shall prepare a draft final report summarizing the objectives, methods, approach, results, and significance of the study. The draft final report will be reviewed by the Project Officer and returned with comments. The principal investigator will

address the comments and submit the final report with revisions. The final report will be due within six months of the completion of the project.

3. Deliverable Items and Schedule - Describe what items of data are to be delivered. State the format in which data will be presented. Provide a schedule for all deliverables.

Under a cooperative agreement with EPA and the FKNMS, the Florida Fish and Wildlife Research Institute (FWRI) has developed a data management plan and data management system for the monitoring and research programs in the FKNMS. Each grant recipient for special studies will work with FWRI or the designated data management entity to be determined to define data entry formats and data QA/QC protocols, and resolve data management conventions and issues. All original and ancillary data produced under the Special Studies Program will be generated, processed, stored, and archived in a manner that provides detailed documentation of the procedures used at all stages of data collection, reduction, processing, analysis, and storage.

4. Environmental Results – Outcomes and Outputs

a. Outputs, Outcomes and Results

i. Outputs (project products)- List the outputs expected to be produced through the completion of the proposed project;
ii. Outcomes (project objectives) - List the outcomes of the project to be accomplished as a result of the project outputs;
iii. Link to EPA Strategic Plan - Describe how project products (outputs) and objectives (outcomes) relate to the EPA Strategic Plan Goal of Healthy Communities and Ecosystems/Restore and Protect Critical Ecosystem/Restore and Protect the South Florida Ecosystem (Goal 4, Objective 4.3, Sub-objective 4.3.7);
iv. Tracking Outputs and Outcomes - Describe your approach for measuring and tracking your progress toward achieving the expected project output(s) and project outcome(s).

F. Literature Cited

References used in the proposal narrative.

G. Budget Summary

General Information B Partners in this request for proposals have secured approximately $1,100,000 to fund the monitoring and data management projects in fiscal year 2010 and 2011 and $100,000 to fund the special studies projects in fiscal years 2010 and 2011. The Comprehensive Status and Trends Monitoring Program, the Data Management Project, and the Special Studies Program are viewed as long-term, and additional dollars may be available to support additional special projects in future fiscal years. Applicants with accepted proposals will be eligible to receive funds from sponsoring agencies via federal assistance agreements.

Individual federal assistance agreements for the monitoring and data management projects will be based upon the actual scopes of work and the associated budgets for each project and the total can not exceed the anticipated project budget for monitoring and data management for FY 2011. Individual federal assistance agreements for special studies projects should not exceed a total of $100,000.

Specific budget information must be submitted in tabular form and summarized on Standard Form 424A. Standard Form 424A and AInstructions for the SF-424A will be mailed or faxed to the applicant upon request.

H. Biographies and Qualifications

Provide a brief biography for each team member that highlights education, experience, and publications related to the proposed project. Curriculum vitae must not exceed three pages each.

I. Past Performance and Programmatic Capability

Environmental Results Past Performance: Submit a list of federally funded assistance agreements (assistance agreements include Federal grants and cooperative agreements but not Federal contracts) that your organization performed within the last three years (no more than 5, and preferably EPA agreements**),** and describe how you documented and/or reported on whether you were making progress towards achieving the expected results (e.g., outputs and outcomes) under those agreements. If you were not making progress, please indicate whether, and how, you documented why not. In evaluating applicants under this factor in Section V, EPA will consider the information provided by the applicant and may also consider relevant information from other sources, including information from EPA files and from current and prior Federal agency grantors (e.g., to verify and/or supplement the information provided by the applicant). If you do not have any relevant or available environmental results past performance information, please indicate this in the proposal and you will receive a neutral score for this factor under Section V.

Programmatic Capability: Submit a list of federally funded assistance agreements (assistance agreements include Federal grants and cooperative agreements but not Federal contracts) similar in size, scope and relevance to the proposed project that your organization performed within the last three years (no more than 5, and preferably EPA agreements) and describe (i) whether, and how, you were able to successfully complete and manage those agreements and (ii) your history of meeting the reporting requirements under those agreements including submitting acceptable final technical reports. In evaluating applicants under these factors in Section V, EPA will consider the information provided by the applicant and may also consider relevant information from other sources, including information from EPA files and from current and prior Federal agency grantors (e.g., to verify and/or supplement the information provided by the applicant). If you do not have any relevant or available past performance or reporting information, please indicate this in the proposal and you will receive a neutral score for these factors under Section V. In addition, provide information on your organizational experience and plan for timely and successfully achieving the objectives of the proposed project, and your staff expertise/qualifications, staff knowledge, and resources or the ability to obtain them, to successfully achieve the goals of the proposed project.

J. Leveraging

Applicants should demonstrate (i) how they will coordinate the use of EPA funding with other Federal and/or non Federal sources of funds to leverage additional resources to carry out the proposed project(s) and/or (ii) that EPA funding will complement activities relevant to the proposed project(s) carried out by the applicant with other sources of funds or resources. Leveraged funding or other resources need not be for eligible and allowable project costs under the EPA assistance agreement unless the Applicant proposes to provide a voluntary cost share or match. If EPA accepts an offer for a voluntary cost share/match/participation, applicants must meet their matching/sharing/participation commitment as a condition of receiving EPA funding. Applicants may use their own funds or other resources for voluntary match/cost share/participation if the standards at 40 CFR 30.23 or 40 CFR 31.24, as applicable, are met. Only eligible and allowable costs may be used for voluntary matches/cost shares/participation. Other Federal grants may not be used as voluntary matches or cost shares without specific statutory authority (e.g. HUD's Community Development Block Grants).
Any form of proposed leveraging that is evaluated under a section V ranking criteria must be included in the proposal and the proposal must describe how the applicant will obtain the leveraged resources and what role EPA funding will play in the overall project.

K. Appendices (3 pages maximum recommended)

Short appendices, not to exceed three total pages, may be used to provide technical backup material to the text, details of computation, and other pertinent information. Techniques or methodologies, if critical to the successful completion of the research, should be discussed in detail within the proposal text (twelve-page limit). Do not attach copies of any journal articles or other proposals to your submittal.

NOTE: Proposals that do not follow the required format may be returned unreviewed.

ATTACHMENT B
PROPOSAL SUBMISSION CHECKLIST

Respondent:_____

_____ 1. Proposal

_____ 2. Applicant Agreement

_____ 3. Proposal Cover Sheet with Required Signatures

_____ 4. Proposal/Project Summary

_____ 5. Introduction - Situation, Need, Previous Efforts, Objectives, Applications, Benefits, and Importance

_____ 6. Methods and Approach - Description of Major Tasks, Environmental Impact, and Future Efforts

_____ 7. Project Management - Administration, Roles and Assignments

_____ 8. Support Requirements and Conditions - Cooperation from Other Organizations, Data and/or Facility Access

_____ 9. Results and Deliverables - Schedule for Delivery of Quarterly Progress Reports and Final Report

_____ 10. Literature Cited

_____ 11. Budget Summary and Standard Form 424A

_____ 12. Biographies and Qualifications

_____ 13. Past Performance

_____ 14. Appendices

ATTACHMENT C
PROPOSAL COVER SHEET

A proposal submitted for projects in the Florida Keys National Marine Sanctuary or Southeast Florida:

Project Title:

Principal Investigator(s):

Date Submitted: _____ Proposed Start Date:_____

We, the undersigned, certify that, in the event this proposal is accepted whole or in part, our signatures on this proposal constitute intended acceptance of and compliance with applicable policy, rules, and regulations of the U.S. Environmental Protection Agency.

ENDORSEMENTS:

Submitted by: Principal Investigator	Approved by: Institutional Representative
_____ Signature	_____ Signature
_____ Typed Name	_____ Typed Name
_____ Title	_____ Title
_____ _____ Address	_____ _____ Address
_____ Phone _____ Fax	_____ Phone _____ Fax
_____ E-mail	_____ E-mail

For Administrative Detail, Please Contact:

Name: _____

Address: _____

_____	_____	_____
Phone	Fax	E-mail

ATTACHMENT D

Grants.gov Proposal Submission Instructions For Announcement Number EPA-R4-WPD-2010-SFL

General Application Instructions

The electronic submission of your proposal must be made by an official representative of your institution who is registered with Grants.gov and is authorized to sign applications for Federal assistance. For more information, go to http://www.grants.gov and click on "Get Started," and then click on "For AORs"(Authorized Organization Representative) on the left side of the page. *Note that the registration process may take a week or longer to complete.* If your organization is not currently registered with Grants.gov, please encourage your office to designate an AOR and ask that individual to begin the registration process as soon as possible.

To begin the proposal process under this grant announcement, go to http://www.grants.gov and click on the "Apply for Grants" tab on the left side of the page. Then click on "Apply Step 1: Download a Grant Application Package" to download the compatible Adobe viewer and obtain the application package. **To apply through grants.gov you must use Adobe Reader applications and download the compatible Adobe Reader version available to download for free on the Grants.gov website. For more information on Adobe Reader please visit the Help section on grants.gov at** http://www.grants.gov/help/help.jsp or http://www.grants.gov/aboutgrants/program_status.jsp).

Once you have downloaded the viewer, you may retrieve the proposal package by entering the Funding Opportunity Number, EPA-R4-WPD-2010-SFL or the CFDA number that applies to the announcement (CFDA 66.436) in the appropriate field. You may also be able to access the proposal package by clicking on the Application button at the top right of the synopsis page for this announcement on http://www.grants.gov (to find the synopsis page, go to http://www.grants.gov and click on the "Find Grant Opportunities" button on the left side of the page and then go to Search Opportunities and use the Browse by Agency feature to find EPA opportunities).

Proposal Submission Deadline: Your organization's AOR must submit your complete proposal package electronically to EPA through Grants.gov (http://www.grants.gov) no later than **5:00 P.M., EST, on June 10, 2010.**

Please submit *all* of the proposal materials described below

Proposal Materials

The following forms and documents are required to be submitted under this announcement:

I. Application for Federal Assistance (SF-424)
II. Budget Information for Non-Construction Programs (SF-424A)
III. Narrative Proposal-prepared as described in Section IV…of the announcement.

The proposal package *must* include all of the following materials:

I. Standard Form (SF) 424, Application for Federal Assistance
Complete the form. There are no attachments. Please be sure to include organization fax number and email address in Block 5 of the Standard Form SF 424.

Please note that the organizational Dun and Bradstreet (D&B) Data Universal Number System (DUNS) number must be included on the SF-424. Organizations may obtain a DUNS number at no cost by calling the toll-free DUNS number request line at 1-866-705-5711.

II. Standard Form SF 424A – Budget Information:
Complete the form. There are no attachments.
The total amount of federal funding requested for the project period should be shown on line 5(e) and on line 6(k) of SF-424A. If indirect costs are included, the amount of indirect costs should be entered on line 6(j). The indirect cost rate (i.e., a percentage), the base (e.g., personnel costs and fringe benefits), and the amount should also be indicated on line 22.

III. Narrative Proposal
Prepared in accordance with the instructions in Section IV… of the announcement. The document should be readable in PDF or MS Word and consolidated into a single file.

Application Preparation and Submission Instructions

Documents I through III listed under Proposal Materials above should appear in the "Mandatory Documents" box on the Grants.gov Grant Application Package page.

For documents I and II, click on the appropriate form and then click "Open Form" below the box. The fields that must be completed will be highlighted in yellow. Optional fields and completed fields will be displayed in white. If you enter an invalid response or incomplete information in a field, you will receive an error message. When you have finished filling out each form, click "Save." When you return to the electronic Grant Application Package page, click on the form you just completed, and then click on the box that says, "Move Form to Submission List." This action will move the document over to the box that says, "Mandatory Completed Documents for Submission."

For document III, you will need to attach electronic files. Prepare your narrative proposal as described in Section IV (and Attachment A) of the announcement and save the document to your computer as an MS Word, PDF or WordPerfect file. When you are ready to attach your proposal to the application package, click on "Project Narrative Attachment Form," and open the form. Click "Add Mandatory Project Narrative File," and then attach your proposal (previously saved to your computer) using the browse window that appears. You may then click "View Mandatory

Project Narrative File" to view it. Enter a brief descriptive title of your project in the space beside "Mandatory Project Narrative File Filename;" the filename should be no more than 40 characters long. If there other attachments that you would like to submit to accompany your proposal, you may click "Add Optional Project Narrative File" and proceed as before. When you have finished attaching the necessary documents, click "Close Form." When you return to the "Grant Application Package" page, select the "Project Narrative Attachment Form" and click "Move Form to Submission List." The form should now appear in the box that says, "Mandatory Completed Documents for Submission."

Once you have finished filling out all of the forms/attachments and they appear in one of the "Completed Documents for Submission" boxes, click the "Save" button that appears at the top of the Web page. It is suggested that you save the document a second time, using a different name, since this will make it easier to submit an amended package later if necessary. Please use the following format when saving your file: "Applicant Name – FY10 – Assoc Prog Supp – 1st Submission" or "Applicant Name – FY 10 Assoc Prog Supp – Back-up Submission." If it becomes necessary to submit an amended package at a later date, then the name of the 2nd submission should be changed to "Applicant Name – FY10 Assoc Prog Supp – 2nd Submission."

Once your proposal package has been completed and saved, send it to your AOR for submission to U.S. EPA through Grants.gov. Please advise your AOR to close all other software programs before attempting to submit the proposal package through Grants.gov.

In the "Application Filing Name" box, your AOR should enter your organization's name (abbreviate where possible), the fiscal year (e.g., FY10), and the grant category (e.g., Assoc Prog Supp). The filing name should not exceed 40 characters. From the "Grant Application Package" page, your AOR may submit the application package by clicking the "Submit" button that appears at the top of the page. The AOR will then be asked to verify the agency and funding opportunity number for which the application package is being submitted. If problems are encountered during the submission process, the AOR should reboot his/her computer before trying to submit the proposal package again. [It may be necessary to turn off the computer (not just restart it) before attempting to submit the package again.] If the AOR continues to experience submission problems, he/she may contact Grants.gov for assistance by phone at 1-800-518-4726 or email at http://www.grants.gov/help/help.jsp or contact Ms. Morgan Jackson at 404-562-9393.

Proposal packages submitted thru grants.gov will be time/date stamped electronically.

If you have not received a confirmation of receipt from EPA (*not from grants.gov*) within 30 days of the proposal deadline, please contact **Ms. Morgan Jackson.** Failure to do so may result in your proposal not being reviewed.

ATTACHMENT E

ANNOUNCEMENT OF OPPORTUNITY FOR FEDERAL FUNDING
U.S. ENVIRONMENTAL PROTECTION AGENCY

SCOPES OF WORK

1. Water Quality Monitoring Project for the Florida Keys National Marine Sanctuary.

WQMP Objectives

The general objective of water quality monitoring is to measure the status and trends of water quality parameters to evaluate progress toward achieving and maintaining water quality standards for protecting and restoring the living marine resources of the Sanctuary. Specific objectives are as follows:

- To provide data needed to make unbiased, statistically rigorous statements about the status and temporal trends of water quality parameters in the Sanctuary as a whole and within defined strata.
- To help define reference conditions in order to develop resource-based water quality standards (biocriteria).
- To provide a framework for testing hypothesized pollutant fate/effect relationships through process-oriented research and monitoring.

Monitoring is defined as the continued observation of Sanctuary waters to determine spatial and temporal variability in water quality. Monitoring involves systematic, long-term data collection and analysis to measure the status of water quality and to detect changes over time. Detecting such changes can focus research on determining the cause, can prompt management decisions for corrective action, and can be used to evaluate the success of corrective action.

Overview

Water quality is monitored using a stratified random design based on a modification of the Sanctuary segmentation framework (Klein and Orlando 1994). In some geographic segments, stations are located along inshore/offshore transects; in others, stations are located randomly within EMAP grid cells. Both approaches meet the requirements of the monitoring program, ie. stations are selected randomly and with equal probability within a segment.

The Sanctuary water quality monitoring program complements and is coordinated with water quality monitoring programs in adjacent areas. The principal investigator for Sanctuary water quality monitoring is also conducting monitoring programs in Florida Bay, Whitewater Bay, the Big Cypress Swamp, and the Southwest Florida Shelf and has provided information about those programs. The Dade County Department of Environmental Management was contacted for information about water quality monitoring in Biscayne Bay. Station locations in the Sanctuary

were selected to minimize overlap, and parameters and methods were chosen to provide comparable data. The Technical Advisory Committee for the Water Quality Protection Program and the Interagency Working Group on Florida Bay provide mechanisms for ensuring future coordination of monitoring.

Monitoring Locations

A modification of the segmentation framework developed by Klein and Orlando (1994) was used to stratify station locations. There is no sampling in Segment 8 or Florida Bay because the effort would overlap with water quality monitoring activities under an existing Everglades National Park program. Two different approaches were used to position stations within segments; both meet the criterion of selecting sites randomly and with equal probability. Within Segments 1, 2, 3, 4, and 6, stations were located randomly within EMAP grid cells. Within Segments 5, 7, and 9, stations were located along transects extending from the inshore zone, across Hawk Channel, to the offshore (or reef tract) zone. The EMAP approach could have been used throughout the Sanctuary, however, a transect approach was chosen for Segments 5, 7, and 9 because the Technical Advisory Committee expressed strong interest in sampling across the inshore/offshore gradient on the Atlantic side of the Keys.

Along each transect, one station was positioned randomly within each of three zones (nearshore, Hawk Channel, and offshore). Average distances from shore to the inner and outer edges of Hawk Channel were estimated for each segment based on nautical charts. For stations along a given transect, distances from shore were randomly selected within the three intervals (shoreline to inner edge of Hawk Channel, within Hawk Channel, and outer edge of Hawk Channel to Sanctuary boundary).

To aid in the interpretation of the seagrass and coral reef/hard bottom monitoring data, it was desirable to co-locate water quality and biological monitoring stations. Each permanent seagrass monitoring station will be located at or near a water quality monitoring station. However, coral reef/hard bottom sites were located independently; some are near water quality stations and others are not. Therefore, it was necessary to add water quality stations at some coral reef/hard bottom monitoring sites. There are a total of 40 coral reef/hard bottom sites. At the request of the National Park Service, six sites were added within Dry Tortugas National Park. These are considered as being within Segment 1 of the FKNMS.

Methods

Each of the 155 stations will be sampled quarterly. Due to sample holding time requirements and the large geographic area covered, the sampling effort will not be synoptic even within a segment. However, transects or groups of transects will be sampled within a day and all transects and stations within a segment will be sampled within a few days. Barring weather and logistical problems, the field effort for each quarterly survey is expected to be completed within 20 working days.

The suite of water column parameters to be measured at each station is listed in Table 1 (available upon request). The principal investigator will observe the protocols described in the Phase II report (EPA 1993). The principal investigator will maintain and document all field and analytical protocols used in this project that satisfy the QA/QC requirements described below.

Field Collections and Measurements

Sampling is conducted in Segments 3-9 from small boats, whereas sampling in Segments 1 and 2 requires a larger vessel with facilities for sample processing and analysis on board. Sampling platforms are equipped to satisfy the technical and safety requirements of the project. Sampling stations are located using Global Positioning System (GPS) navigation on each survey. Upon completion of the first survey, the principal investigator produced a summary map of the monitoring station network with a listing of stations names, GPS coordinates, water depths, and bottom type.

A multi-sensor, water quality monitoring instrument (SeaBird CTD) is used to measure physicochemical parameters in the field. Semi-continuous measurements are made throughout the water column using the Seabird CTD in an effort to generate a depth profile of each parameter. The physicochemical parameters measured include depth, salinity, temperature, DO, turbidity, PAR, and in situ fluorescence as described in EPA (1993). The light extinction coefficient (k in m^{-1}) is calculated as a log function from PAR measurements through the water column.

Water samples are collected using a Niskin sampler and analyzed for nutrients, turbidity, and biological parameters. In general, where station depth is <3 m, samples are collected at 0.5 m below the surface. At stations >3 m in depth, samples are collected from 0.5 m below the surface and 1 m above the bottom. QC procedures necessary for ensuring the collection of representative and uncontaminated samples are observed (cleaning water samplers, rinsing sample bottles, minimizing contact of samples with air, etc.).

Laboratory Analyses

Nutrient parameters analyzed are ammonium (NH_4^+), nitrate + nitrite (NO_x^-), nitrite (NO_2^-), silicate (SiO_2), soluble reactive phosphate (SRP), total organic carbon (TOC) with the additional biological parameter chlorophyll a (CHLA). Some parameters are not measured directly, but calculated by difference. Nitrate (NO_3^-) is calculated as $NO_X^- - NO_2^-$. Total inorganic nitrogen (TIN) is calculated as $NO_X^- + NH_4^+$. Total organic nitrogen (TON) is defined as TN - TIN.

Dissolved nutrients are defined using Whatman GF/F filters with a nominal pore size of 0.8 μm. A 60 ml sample is collected from a Niskin bottle using a syringe and filtered through a 25 mm Whatman GF/F filter. The filtrate is collected in a 60 ml high density polyethylene bottle and the filter stored in a vial with acetone for extraction of CHLA (surface sample only). An additional 60 ml sample is collected directly from the Niskin bottle for analysis of TN, TP, turbidity, and APA. NH_4^+ is analyzed by the indophenol method (Koroleff 1983). NO_2 is analyzed using the

diazo method and NO_x^- is measured as nitrite after cadmium reduction (Grassoff 1983a,b). The ascorbic acid/molybdate method is used to determine SRP (Murphy and Riley 1962). High temperature combustion and high temperature digestion is used to measure TN utilizing a Shimadzu TOC-V (Walsh 1989; Sharp et al. 2002; 2003) and TP (Solórzano and Sharp 1980), respectively. TOC is determined using the high temperature combustion method of Sugimura and Suzuki (1988). Silicate is measured using the heteropoly blue method (APHA 1995). Detailed protocols are presented in EPA (1993). Samples are analyzed for CHLA content by spectrofluorometry of acetone extracts (Yentsch and Menzel 1963). Protocols are presented in EPA (1993) and elsewhere as noted.

Quality Assurance/Quality Control

The principal investigator will establish a QA Program for water quality monitoring to ensure that the data generated are accurate and representative of actual conditions and that the degree of certainty of the data can be established. In accordance with EPA policy, the Sanctuary water quality monitoring program will adhere to existing rules and regulations governing QA and QC procedures as described in EPA guidance documents. The principal investigator will consult with the EPA Region IV QA/QC Officer on any issues involving QA/QC matters.

The principal investigator will produce and submit a Quality Assurance Project Plan to EPA. Approval of the Plan is required before work can begin and any data can be accepted. Through the Plan, the principal investigator explicitly commits to incorporating procedures that will reduce and maintain random and systematic errors within specified tolerable limits. In addition, the principal investigator will document QC procedures and evaluate the quality of the data being produced. Plans should include or refer to a description of safety, training, and equipment maintenance. Data quality objectives will be developed to ensure the utility of data for the application.

The Quality Assurance Project Plan will be prepared according to the format prescribed in EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations, EPA QA/R-5. The principal investigator should develop the Plan in close coordination with the EPA Region IV QA Officer to minimize delays in the process. The Handbook for Analytical Quality Control in Water and Wastewater Laboratories (EPA 1979) should be consulted for guidance on QC procedures for participating laboratories.

Data Management

The principal investigator will develop and maintain protocols and procedures under a data management program for water quality monitoring to ensure that the data generated are accessible to potential users in a timely manner. All original and ancillary data produced under this project will be generated, processed, stored, and archived in a manner that provides detailed documentation of the procedures used at all stages of data collection, reduction, processing, analysis, and storage.

Under a cooperative agreement with EPA, FWRI developed a data management plan and prototype data management system for the monitoring and research programs. The principal investigator will work with FWRI to identify priority data needs, define data entry formats and QA/QC protocols, and resolve data management conventions and issues (e.g., station nomenclature and codes, parameter codes, the geographic datum, missing number codes, error flags).

The principal investigator will design and develop a computerized database under a commercially/commonly available personal computer based database program with guidance from EPA and FWRI. The database will be designed to contain the original data generated by the project and any ancillary information necessary for interpretation of the data. The database will be developed in a format that will allow the database to be directly imported into the data management system to be implemented by FWRI.

Reporting

The principal investigator will produce a station map, quarterly data reports, and an annual report. The principal investigator will be responsible for ensuring that results are compiled and the complete data set is submitted in a timely fashion to FMRI for inclusion into the Sanctuary database.

Station Map and Coordinates - Upon completion of the first survey, the principal investigator will produce a summary map of the monitoring station network with a listing of station names, GPS coordinates, water depths, and bottom types.

Quarterly Data Reports - Upon completion of the analysis of samples from each quarterly survey, the principal investigator will produce a statistical summary of the data in a logical format based on the segmentation scheme and station design. The statistical summary will include calculated averages, sample variances, ranges, and number of samples. When appropriate, the principal investigator will provide the summaries in a graphical format. The principal investigator will submit a data and narrative report documenting the results of each quarterly survey. The data report will include the raw data and statistical summaries in hard copy and on disk. The investigator will evaluate the data in accordance with the data quality objectives developed in the Work/Quality Assurance Project Plan.

Annual Report - After completion of analysis of samples from the fourth quarterly survey, the principal investigator will produce statistical summaries of the data collected at each water quality monitoring station to be incorporated in an annual report. All data will be evaluated in relation to the data quality objectives developed in the Work/Quality Assurance Project Plan. The data will be analyzed using appropriate statistical tests of significance to meet the specific objectives of the monitoring program. The statistical analysis and presentation will include, at minimum:

- Statistical characterization (e.g., means, standard deviations, and ranges of water quality parameters) for each site, each stratum, and the Sanctuary as a whole
- Significant differences among strata, including differences among segments and among inshore/offshore strata within the appropriate segments
- Significant trends in water quality parameters within strata and the Sanctuary as a whole
- Graphical and/or statistical analysis of relationships between water quality parameters and water depth and distance from shore or other pollution sources
- Violations of water quality standards and any other indications of polluted conditions

The draft annual report should summarize the objectives, methods, and results of water quality monitoring. The report should interpret the results in relation to the objectives of the monitoring program and the Water Quality Protection Program. The draft annual report will be reviewed by EPA, FDEP, and the Technical Advisory Committee and returned with comments. The principal investigator will address the comments and submit the final annual report with revisions.

2. Coral Reef Evaluation and Monitoring Project (CREMP) for the Florida Keys National Marine Sanctuary

Introduction

The original purpose of this project was to monitor the status and trends of selected coral reefs, patch reefs, and hardbottom in the Florida Keys National Marine Sanctuary as part of the EPA Water Quality Protection Program. From 1996 to 1999, sampling was conducted annually at 40 permanent sites from Key Largo to Key West. In 1999, three additional sites were added to extend the project into the Tortugas North Ecological Reserve and Dry Tortugas National Park to provide baseline data for the Reserve and expand FWRI=s historical database for work in the Park. In 2001, the purpose of the project was further expanded to address the goals of the Coastal Ocean Program=s (COP) South Florida Ecosystem Research and Monitoring Program(SFP) to predict (document) impacts of South Florida ecosystem restoration. The project=s purpose to detect change was refined in 2002 to potentially determine factors contributing to the documented decline in stony coral cover.

Project Organization

For the first 5 years, The Coral Reef/Hardbottom Monitoring Project (CRMP) was conducted through a grant from the Environmental Protection Agency to the State of Florida=s Fish and Wildlife Conservation Commission=s Fish and Wildlife Research Institute (FWRI). The Institute contracted with University of Georgia and University of Charleston, S.C. for professional expertise. In FY 00/01, EPA provided half and NOAA provided the remainder of funding. FWRI assumed additional responsibilities and retained only the UGA contract for outside expertise. However, FWRI has retained the services of independent consultants for statistical analyses. Since FY01/02, EPA and COP assumed a partnership to provide equal funds for a fully funded expanded Coral Reef Evaluation and Monitoring Project (CREMP).

Project History

After the initial five years, statistical analyses of project data provided for a 33% (49 of 160 original stations) reduction in sampling effort with no reduction in spatial scale which allowed continuation of the project with reduced funding. The station reduction was implemented in summer 2000.

Methods

Underwater sampling is conducted by SCUBA supplemented by NITROX to enhance safety when necessary. FWRI's 37-foot research vessel (R/V Tortugas), outfitted with a portable SCUBA compressor, supports the majority of fieldwork. A detailed description of diving and vessel operations is provided in the Coral/Hardbottom Monitoring Project Quality Assurance Project Plan and the Standard Operating Procedures. All work continues to be conducted under the existing approved Quality Assurance Project Plan. Standard Field Operation Procedures have been revised annually and provided to all CRMP team members. Field SOP=s have been revised to incorporate methods for bioerosion, stony coral abundance and recruitment, diseased coral and enterovirus sample collection.

Field Data Collection

Stations were installed during summer/fall 1995 with FKNMS logistical support. In 1996, sampling of only 75% of the stations was completed by summers end due to adverse weather conditions. OSV Anderson was provided by EPA for a Sanctuary-wide cruise in early October. Remaining stations off Marathon were completed aboard the R/V Tortugas in late October. First annual sampling of all 40 sites was successfully completed during calendar year 1996. All sites have been sampled annually to present.

Station Species Inventory

CREMP has an established protocol. Station species inventory is a census of stony coral presence/absence, selected "disease" or other abnormalities, and *Diadema antillarum*. Data provides species richness of the Scleractinia (stony corals). This method is described in detail in the Coral/Hardbottom Monitoring Project Quality Assurance Project Plan and the Standard Operating Procedures. Task per station requires 20 to 25 minutes. To assure quality and consistency of data, beginning summer 2002, protocol incorporated one senior Principal Investigator and one qualified data collector as frequently as possible.

Video Transects

CREMP has an established protocol. Video sampling is conducted at a fixed 40cm distance from the reef=s surface with the video system oriented perpendicularly (0.4 meters above substrate). Paired laser lights, focused to a single point on a reference chain, provide guidance while the camera is slowly moved along the length of each transect. Sampling speed is 4 to 5 meters a minute. Summer 2000 sampling incorporated digital video technology. Since 2002, additional filming of the station's center (300) transect was conducted at a distance of 1.5m to provide a mosaic overview of the station to facilitate documenting landscape change over time. Task per station is 15 to 20 minutes.

Bioeroding Sponge Assessment

Data on coral eroding clionid sponges are collected at stations within a 1-m wide belt transect. A PVC pole is held perpendicular to the survey tape, as the observer swims the transect, the location of first intersection of every colony of boring sponge (e.g. C*liona delitrix, C. varians, C. lampa, or C. caribbaea*) is recorded within a quadrat (5 by 5 cm) which is deployed over the sponge colony. Number of quadrat cells covering the sponge will be recorded. Three transects are sampled at each station. Data is entered directly into the database. Data will be analyzed to provide an estimate of sponge colony size and distribution and abundance within FKNMS.

Temperature - Small in situ temperature loggers were installed at selected value added sites during 2002 and early 2003. These will be recovered, replaced, and downloaded quarterly. A 15 minute dive is estimated to deploy two units by attaching each instrument to a specified reference stake with cable ties.

Data Reduction

Station Species Inventory - Data from SSI counts is entered, checked, reduced, and analyzed annually following QA/QC procedures.

Video - Initial development of the image analysis software delayed processing and counting of the first years (1996) video. Post-processing field video continually delayed video image analyses (point counting) and prevented timely analysis of cover data for the first five years. About 25% of the 1999 video was counted prior to the 2000 field season; however, since 2000, all video from that years summer sampling has been counted prior to the next summer field season.

Annually, the project video is grabbed, converted and analyzed. New techniques of framegrabbing and conversion of images for CD ROMs have been developed for digital video to expedite distribution of the projects video images (CD ROMs) for point counting and to provide timely percent cover analyses. Software (PointCount for Coral Reefs) developed with project funds is used to collect data from digital imagery and has been revised to facilitate efficient

image analysis. Ten random points have been determined as optimal for image analysis of the CREMP video data. Stony corals and other major benthic groups (octocorals, sponges, macro-algae, seagrass, and substrate) are identified and relative percent cover is quantified.

Analyses

All project data are entered into a Microsoft Access database, which facilitates data analyses. After entry into the database, each individual record is checked as part of the QA/QC process. Microsoft Excel is used for preliminary analyses of species richness and frequency of occurrence. In addition, hypothesis testing is performed on the SSI data to determine whether or not there is a difference in the proportion of stations where each species/condition is present. For total stony coral percent cover and individual species, at the station level, hypothesis testing is performed for to compare current year data to all previous years combined. The output of these tests gives the minimum detectable difference that would be deemed significant for a significance level = 0.10 and power = 0.75. At the sanctuary level, non-parametric tests are applied as the data failed the Kolmogorov-Smirnov test for normality. The Kruskal-Wallis H test and the Wilcoxson Rank Sum test are applied to the medians to determine if the data exhibit significant differences.

Proposed Work for FY 2011-2012

The field sampling team will consist of a minimum of six staff, preferably seven. We will sample deep offshore, shallow offshore, patch, and one hardbottom site as representative of the reef habitat types in the Florida Keys.

Field Data Collection

At all sites, the CREMP will collect Station Species Inventory (SSI) data [stony coral presence/absence, selected "disease" and bleaching data (including counts of *Diadema antillarum*)] and video as first priority. CREMP work will be supplemented with bioerosion data collection. Aquatic health samples will be collected from a sub-set of diseased corals and octocorals at selected sites. In each geographic locality (Upper, Middle, and Lower Keys), the sampling gradient will include a near shore, a Hawk Channel, and an offshore site designated as Value Added sites. Data will be collected at 2 stations at each site.

Reports and Presentations

Quarterly reports have and will be submitted as required. Power point presentations and executive summaries will be provided for the WQPP Technical Advisory and Steering Committees. Executive Summaries, which have been prepared annually, will be submitted with annual summaries of field data to fulfill annual report requirements. Annual Report consisting of the Executive Summary and summary of all annual data will be submitted. Project staff will address comments by EPA, the Technical Advisory Committee, the Steering committee and NOAA Coastal Ocean Program as requested.

Data Management

As of May 2004, the monitoring data set consists of about 2,250,000 records. The comprehensive data management effort is based at FWRI. Full-time staff are qualified for data entry, summary statistics, and other data management duties.

CREMP data management encompasses the following basic duties: track, concatenate, QA check and compile a master data set of all project data; conduct basic mathematical summaries of annual data; distribute the summaries and master data to principal investigators and project manager on a timely basis; provide summary tables at request of project manager for incorporation into reports as needed and act as liaison between the Monitoring Project, the professional statistical consultants and the Florida Keys National Marine Sanctuary Data Management Workgroup. Staff also liaison with the CAMRA WQPP data management staff.

Data archive and summary distribution is the responsibility of the FKNMS Data Management Workgroup. In December 2001, the data manager transferred all 1996-2001 Station Species Inventory and 1996-2000 video data for inclusion in the second FKNMS Water Quality Protection Program=s interactive CD-ROM being produced by FWRI=s CAMRA group. In addition, GIS data was provided for computerized mapping of this data. Metadata for both Station Species Inventory and Video data were updated to meet FGDC standards.

Raw data includes copies of all field data sheets, video tapes (Hi-8 for 1996-1999 and digital for 2000-2007), video tape log copies, and a set of annual CD-ROMs. A fire-proof cabinet with water-proof media coolers houses and protects all original video tapes at FWRI. CREMP data are stored on the FWRI server, which is backed-up on a regular basis.

Quality Assurance/Quality Control

Internal - All work will be conducted under the existing approved Quality Assurance Project Plan.

3. Seagrass Monitoring Project for the Florida Keys National Marine Sanctuary

Objectives

The general objective of seagrass monitoring is to measure the status and trends of seagrass communities to evaluate progress toward protecting and restoring the living marine resources of the Sanctuary. Specific objectives are as follows:

1. To provide data needed to make unbiased, statistically rigorous statements about the status and temporal trends of seagrass communities in the Sanctuary as a whole and within defined strata

2. To provide a framework for testing hypothesized pollutant fate/effect relationships through process-oriented research and monitoring

Monitoring is defined here as the continued observation of seagrass communities to determine spatial and temporal variability. Monitoring involves systematic, long-term data collection and analysis to measure the status of these communities and to detect changes over time. Detecting such changes can focus research on determining the cause, can prompt management decisions for corrective action, and can be used to evaluate the success of corrective action.

Overview

Seagrass monitoring will involve *in situ* measurements of population and community level characteristics. Seagrass communities will be monitored using a stratified random design based on the Sanctuary segmentation framework (Klein and Orlando 1994). During the first 7 years of this project, three sets of sites have been monitored:

$ **Level I sites (species composition, cover and abundance, isotopic and elemental content of seagrasses)**
Randomly chosen, permanent sites will be sampled quarterly to determine the species composition and relative abundance of all macrophyte species, as well as to determine the elemental and stable isotopic content of the seagrasses. This allows for determination of the relative abundance of fast-growing species, the deviation from seagrass Redfield ratio in elemental content, and stable isotopic composition of nitrogen and phosphorus. These parameters are used to track the status and trends of the benthic macrophyte community in relation to nutrient availability and water quality.

$ **Level II sites (species composition, cover and abundance, isotopic and elemental content of seagrasses)**
Wider geographic coverage will be obtained by monitoring additional, randomly chosen sites for the same parameters as assessed at the Level I sites. Sampling will occur annually, with new sites chosen each year.

$ **Level III sites (cover-abundance)**
Finer-scale sampling at the geographic scale will be accomplished by using a rapid, semi-quantitative approach to characterizing seagrass community status through measurement of cover-abundance at randomly chosen sites. Sampling will occur annually, with new sites chosen each year.

The mix of site types was intended to monitor trends through quarterly sampling at a few permanent locations (Level I sites) and to annually characterize the broader seagrass population through less intensive, one-time sampling at more locations (Level II and III sites). We feel that we have adequately characterized the spatial distribution of benthic habitats in the FKNMS at this time, so in FY 2001 and 2002 Level II and Level III sites were not monitored. We have determined that the rate of change on these benthic communities occurs on a time scale longer than yearly, so we did not collect the broad spatial scale data for 2 years. In 2003, we started resampling the Level II and Level III sites that were originally sampled in 1996-2000. It is

proposed that no resampling of these sites will occur in 2008 and 2009, matching the pattern established in 1996-2000; but, that Level II and Level III sites will again be sampled beginning in 2010.

Sampling methods are comparable to those being used to monitor seagrass in Florida Bay and Biscayne Bay. Seagrass communities in these areas are being monitored by researchers from Everglades National Park, Florida International University, the University of Virginia, FWRI, EPA/EMAP, and the Miami-Dade County Department of Environmental Management. The approach and methods described in this program have been developed with the collaboration of the primary researchers involved in the ongoing programs.

Monitoring Locations

Monitoring locations have been chosen to be compatible with other monitoring programs being conducted by Everglades National Park, Florida International University, FWRI, and EPA/EMAP). Level I sites were located to coincide with water quality monitoring stations.

Level I Sites

Level I sites are located in Segments 4, 5, 6, 7, and 9. There are six sites in segments 4, 6 and 7, and seven sites in segments 5 and 9. In Segments 5, 7, and 9 (Atlantic side of the Keys), two sites will be located in each of the following strata: nearshore, Hawk Channel, and offshore. No further stratification is planned within the other segments.

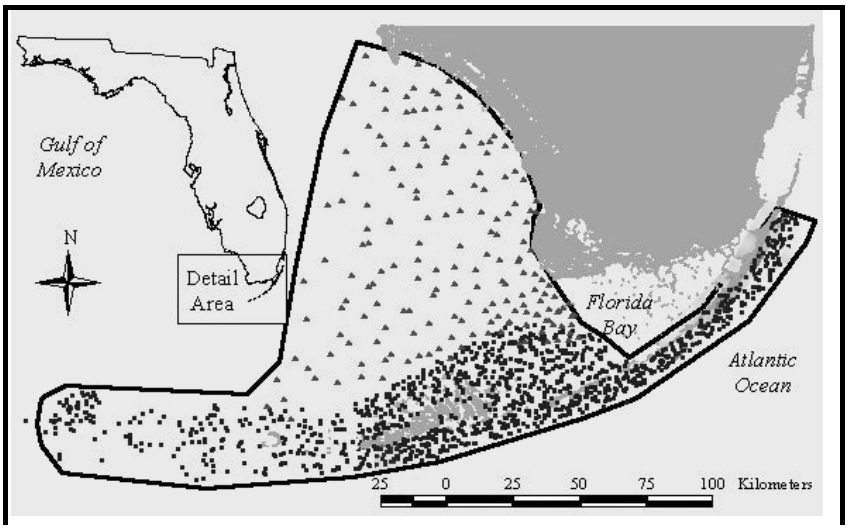
Because it is advantageous to co-locate biological and water quality monitoring sites, and because seagrass is nearly ubiquitous in the Sanctuary, all Level I (permanent) sites will be located at or near water quality stations. Within each stratum, one of the several water quality stations will be picked at random and the seagrass site will be located at the water quality station or in the nearest seagrass bed on a random heading. Randomization of Level I sites is assured by the process used to position water quality stations.

Level II Sites

Level II sites will be located in all segments except number 8. There will be six sites each in Segments 4, 5, 6, 7, and 9; nine sites each in Segments 1 and 2; and three sites in Segment 3. Level II sites will be located randomly within each segment using the EMAP grid. In Segments 5, 7, and 9 (Atlantic side of Keys), the sites will be located within each of the following strata: nearshore, Hawk Channel, and offshore. No further stratification is planned within the other segments.

Level III Sites

Level III sites will be located in all segments except number 8. There will be 10 sites in Segment 3 and 30 sites in each of the others. Level III sites will be located randomly within each segment using the EMAP grid. In Segments 5, 7, and 9, sites will be located in each of the following strata: nearshore, Hawk Channel, and offshore. No further stratification is planned within the other segments.



Planned Sampling for FY2011 and FY 2012

Sampling at the Level 1 sites will continue on a quarterly basis. The resampling of the Level 3 sites originally sampled in 1997 was completed in FY 2004. In FY 2005, Level 2 and Level 3 sites sampled in FY 1998 were resampled, and in FY 2006, sites sampled in FY 1999 were resampled.

In order to describe the spatial extent and pattern in the benthic communities, monitoring sites were selected across the extent of the monitoring area. This monitoring program was designed

to assess status and trends in seagrass communities across the entire extent of the Florida Keys National Marine Sanctuary, a 9,000 km^2 area of ocean surrounding the Florida Keys. It was recognized early in the monitoring program that the expansive shallow marine habitats immediately to the north of the Sanctuary on the southwest Florida Shelf also were important for determining the status of seagrass communities within the Sanctuary itself, so the monitoring program was extended to cover these additional 8,000 km^2 as well (Figure 1). It is a goal of the program to describe spatial pattern in the indicators of interest, hence it is important to sample the entire region. A distributed, stratified-random algorithm was used to choose sampling sites for synoptic mapping across the region of interest. The locations for each site were chosen by laying a probability-based grid over the area of interest, and then randomly choosing a location within each grid cell. This method allows sampling locations to be spaced quasi-evenly across the landscape while still maintaining the assumptions required for a random sample, i.e. all locations had an equal probability of being sampled. In each of the first 5 years of the monitoring program (1996-2000), the same arrangement of grid cells was employed, but new random points were selected within each cell each year. This allows for the development of synoptic maps of measured indicators during each monitoring year, as well as a combined data

set of quasi-evenly spaced random points collected over 5 years. The original monitoring plan called for revisiting the first year=s sites during the sixth year, the second year=s site during the seventh year, etc - so that trends in the resource over a 5-year interval could be tested with *n* pair-wise comparisons for 5 years in a row. However, because of the slow rate of change observed at the permanent monitoring stations, it was decided to delay the beginning of the resampling until FY 2003, when the stations first surveyed in FY 1996 were revisited.

The locations of the Level 2 and Level 3 sites to be sampled in FY 2009 and FY 2010 are available upon request. These sites are distributed throughout the FKNMS and across the broad, shallow portion of the southwest Florida Shelf to the north of the FKNMS (Figure 1).

Parameters and Methods

Monitoring will provide measures of population and community level characteristics in the seagrass community, including seagrass cover, density, growth rate, standing crop, productivity, and seagrass elemental content. The parameters to be measured and the sampling frequency and number of sites for each level of effort are listed in tabular form and are available upon request**.** Level I sites will be sampled quarterly.

Sampling techniques to be used in the monitoring program are based on the methodology primarily used by Fourqurean, Zieman, and Durako in Florida Bay to monitor seagrass die-off. The techniques include both rapid, qualitative assessments and more labor-intensive quantitative methods:

- $ Shoot morphometrics will be analyzed from randomly selected shoots at each Level I and Level II site.

- $ Cover-abundance of seagrass will be estimated at each Level I, Level II, and Level III site.

- $ Seagrass elemental content (Carbon, Nitrogen and Phosphorus) will be determined for all seagrass species present at Level I and Level II sites, following the methods described in Fourqurean et al. (1992).

- $ Assessment of physiological status of *Thalassia testudinum* using PAM fluorometry, following the methods described in Beer et al. 1998, Beer and Bjork 2000, and Ralph and Dennison 1998.

Shoot Morphometrics

At Level I sites, shoot morphometrics will be measured on all seagrass short shoots harvested from the productivity quadrats during the summer quarter sampling. These shoot samples will be analyzed for:

- $ no. of species
- $ no. of short shoots per species
- $ no. of blades per short shoot
- $ no. of new shoots, fruits, and flowers
- $ no. of leaf scars and no. of leaves per short shoot
- $ shoot age (no. of leaf scars + no. of standing leaves)
- $ plastochrone interval
- $ canopy height

Seagrass Elemental Content

Five samples of representative short shoots of each species will be collected at each Level I site for determination of C, N and P content. The number of shoots collected for each sample is a function of species, with 5 *Thalassia testudinum*, 10 *Syringodium filiforme*, and 15 *Halodule wrightii* shoots being collected. These shoots will be selected arbitrarily, and collected in a manner that ensures sampling of complete shoots. These will be stored in a plastic bag on ice and transported back to the laboratory. Leaves will be separated from the shoots, and cleaned of epiphytes by gently scraping with a sharp blade. All blades from a sample will be pooled, rinsed in tap water, and dried to constant weight at 60 C. Dried samples will be homogenized in a mortar and pestle or a mill. Samples will then be stored over dessicant until they are analyzed.

Carbon and nitrogen content will be determined for duplicate subsamples from each sample, using an automated, combustion technique. Phosphorus content will be determined in duplicate using a dry-oxidation, acid-hydrolysis procedure (details of methods in Fourqurean et al. 1992).

Other Samples/Observations

Qualitative cover-abundance observations will be recorded to allow cross-comparison of data. Each Level I site will be surveyed each quarter for seagrass and macroalgal abundance using the Braun-Blanquet cover-abundance scale. Depending on the community type and macrophyte density, a grid or a transect will be set up at each site, and cover-abundance in six to ten 0.25 m^2 quadrats located randomly within the grid or along the transect will be assessed according to the following scale:

5	any number, with cover of more than 75% of the quadrat
4	any number, with 50 to 75% cover
3	any number, with 25 to 50% cover
2	any number, with 5-25% cover
1	numerous, but less than 5% cover, or scattered with up to 5% cover
+	few, with small cover (assigned a value of 0.5)
r	solitary with small cover (assigned a value of 0.1)

The upper four scale values (5, 4, 3, 2) refer only to cover. The lower three scales are primarily estimates of abundance, i.e. the number of individuals per species. Frequency of occurrence, abundance, and density information for a species within a transect will be calculated using the following formulas:

- $ Frequency = number of occupied quadrats/total number of quadrats
- $ Abundance = sum of Braun-Blanquet scale values/number of occupied quadrats
- $ Density = sum of Braun-Blanquet scale values/total number of quadrats

The presence/absence of fleshy epiphytic algae, calcareous epiphytic algae, and macroalgae will also be noted.

Quality Assurance/Quality Control

A Quality Assurance Program for seagrass monitoring has been approved by EPA. This program will be ammended to cover C:N:P determinations. In accordance with EPA policy, monitoring will adhere to existing rules and regulations governing QA/QC procedures as described in EPA guidance documents. The principal investigators will consult with the EPA Region IV QA/QC Officer on any issues involving QA/QC matters.

Data Management

The principal investigators will develop and maintain protocols and procedures under a data management program to ensure that the data generated are accessible to potential users in a timely manner. All original and ancillary data produced under this project will be generated, processed, stored, and archived in a manner that provides detailed documentation of the procedures used at all stages of data collection, reduction, processing, analysis, and storage.

Under a cooperative agreement with EPA, FWRI developed a data management plan and prototype data management system for the monitoring and research programs. The principal investigators will work with FWRI to identify priority data needs, define data entry formats and QA/QC protocols, and resolve data management conventions and issues (e.g., station nomenclature and codes, parameter codes, the geographic datum, missing number codes, error flags).

Reporting

The principal investigators will produce a site map, quarterly data reports, and an annual report. The principal investigators will be responsible for ensuring the results are compiled and the complete data set is submitted in a timely fashion to FWRI for inclusion into the Sanctuary database.

Site Map and Coordinates

Upon completion of the first survey, the principal investigators will produce a summary map of the monitoring network with a listing of sites, GPS coordinates, and water depths.

Quarterly Data Reports

Upon completion of the analysis of samples from each quarterly survey, the principal investigators will produce a statistical summary of the data in a logical format based on the sampling design. The statistical summary will include calculated averages, sample variances, ranges, and number of samples. When appropriate, the principal investigators will provide the summaries in a graphical format. The principal investigators will submit a data and narrative report documenting the results of each quarterly survey. The data report will include the raw data and statistical summaries in hard copy and on disk. The principal investigators will evaluate all data in accordance with the data quality objectives developed in the Work/Quality Assurance Project Plan.

Annual Report

The principal investigators will produce statistical summaries of the data collected at each seagrass monitoring site to be incorporated in an annual report. All data will be evaluated in relation to the data quality objectives developed in the Work/Quality Assurance Project Plan. The data will be analyzed using appropriate statistical tests of significance to meet the specific objectives of the monitoring program. The statistical analysis and presentation will include, at minimum:

- Statistical characterization (e.g., means, standard deviations, and ranges of parameters measured) of each site, each geographic segment, and the Sanctuary as a whole
- Significant differences among geographic segments
- (In future years) Significant trends within geographic segments and the Sanctuary as a whole
- Relationships between seagrass and water quality parameters
- Any indications of unusual conditions possibly indicative of pollution

The draft annual report should summarize the objectives, methods, and results of seagrass monitoring. The report should interpret the results in relation to the objectives of the monitoring program and the Water Quality Protection Program. The draft annual report will be reviewed by EPA, FDEP, and the Technical Advisory Committee and returned with comments. The principal investigators will address the comments and submit the final annual report with revisions.

4. Data Management Program for the Water Quality Protection of the Florida Keys National Marine Sanctuary

Project Purpose

Goal - The goal of this project is to provide a data integration system that takes into account the varying levels of data produced by individual monitoring projects and the needs of both managers and researchers. In order to accurately incorporate the different levels of scientific data produced, the data integration system is comprised of two components: data archives and data integration.

Data Archives - The data archives component encompasses both raw and synthesized data. These data sets will be stored in a centralized location in the original formats presented by the individual projects. No data manipulation including formatting, standardizing, or merging will be done for, or within, this component of the data integration system. Access to these data, in their original form and content, will be provided upon request and approval from the Sanctuary Manager to researchers, managers, and the general public.

Data Integration - Result data, both tabular and geospatial, are to be integrated for incorporation into a geographic information system to facilitate further analysis by researchers and managers. The result data that are to be contained within the database integration system will be documented with project level metadata as well as attribute or parameter level metadata. Integration summaries will also be available within the integrated database.

Work Plan

Background and Approach

The Florida Keys National Marine Sanctuary was created with the signing of the Florida Keys National Marine Sanctuary and Protection Act on November 16, 1990. Included in the Sanctuary are 2900 square nautical miles of nearshore waters extending from just south of Miami to the Dry Tortugas. The 1990 Act directed the Environmental Protection Agency (EPA) and the State of Florida, in consultation with National Oceanic and Atmospheric Administration (NOAA), to develop a Water Quality Protection Program (WQPP) for the Sanctuary. This is the first marine sanctuary required to have a WQPP.

The purpose of the WQPP is to recommend priority corrective actions and compliance schedules addressing point and nonpoint sources of pollution to restore and maintain the chemical, physical, and biological integrity of the Sanctuary. The 1990 Act also requires development of a comprehensive water quality monitoring and research program and was delivered to NOAA in

May 1993. In addition to the 1990 Act, Congress passed the National Marine Sanctuaries Program Amendment Act of 1992. Section 2209 of this Act directs the EPA and the State of Florida to implement the WQPP.

The EPA and the State of Florida have developed an implementation plan for the monitoring, research, and data integration programs. Management priorities, available funds, and estimated costs were considered in developing each of the programs. The monitoring program is divided into three on-going projects: water quality, seagrass, and coral reef/hardbottom. The research program encompasses a wide variety of geographically specific projects, all of a short-term duration. The data integration program combines and integrates the data produced by the other programs.

The WQPP document specifically recommends the establishment of a regional database and data management system for recording the biological, physical, and chemical results from the comprehensive monitoring and research programs. Therefore, in July 1993, the EPA issued a cooperative agreement (#X994346-93-0) to the Florida Department of Natural Resources (now FWCC) Marine Research Institute for the development of a data management plan and prototype data management system. Since then, significant progress has been made in achieving these goals. The data management plan was completed in December 1995.

EPA's STORET is a keystone upon which to build a data entry and access tool for researchers, managers and the public that incorporates levels of security and includes embedded documentation from the organization level down to specific sampling results. STORET has evolved from a simple data repository for water-quality data to one that can accept biological, chemical, and physical data. With its latest developments, raw and synthesized data can be added to STORET. Data are loaded onto a local version of STORET and then uploaded to the STORET Data Warehouse on a monthly, quarterly or yearly basis. Interested parties can then query WQPP data, as well as data collected by other scientists, from the STORET Web site.

FWC is a State of Florida commission established in July 1999. The Fish and Wildlife Research Institute (FWRI) is administered by the Commission's Executive Office. FWRI's mission as part of the Commission is to 1) Serve as the primary source of research and technical information and expertise on the status of Florida's saltwater resources; 2) Monitor the status and health of saltwater habitat, marine life, and wildlife; 3) Develop and implement restoration techniques for marine habitat and enhancement of saltwater plant and animal populations; 4) Respond and provide critical technical support for marine catastrophes including oil spills, ship groundings, major marine species die-off, hazardous spills, and natural disaster; 5) Identify and monitor marine toxic red tide and their impacts, and provide technical support for state and local public health concerns; and 6) Provide state and local governments with coastal, estuarine and marine technical information as well as research results. FWRI has been involved with data Management component of this effort since 1993. This proposal will address only those aspects associated with the Data Management Project.

Data availability has become a major focus of the data management project. Research programs have been conduction water quality sampling since 1996 and have accrued a large amount of data, both "raw" and synthesized. Two methods for access to WQPP data have been identified: EPA's STORET and an Internet Map Server (IMS) and web query interface.

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One of the overall objectives of this effort is the ability to provide these data to resource managers. An Internet Map Service (IMS) will be created to serve the data. This website will make both data access and mapping capabilities available to users without having access to expensive GIS mapping software. The mapping capabilities of geo-referenced data on the Web through an IMS have increased greatly in the past few years. An IMS allows users to view and query GIS and tabular data via a Web browser without having an expensive GIS on their computer.

Through the use of unique identifiers, a series of related tables can be accessed and queried. IMS applications allow researchers to interactively navigate through a map-centric Web site in order to identify and extract specific information based on spatial extent. The query functionality allows users to perform tabular queries on the Spatial Metadata Management System (SMMS) Microsoft Access database. Queries are based on selecting attributes of specific fields. Users can then view metadata based on query results. For example, users could conceivably select a time period of interest, place keyword, or other defined parameter to focus a search and return a list of sampling sites that fall with the area of interest. The selected data can then be downloaded to the user's computer for further analysis.

The goal of this project is to provide a data integration system that takes into account the varying levels of data produced by individual monitoring projects and the needs of both managers and researchers. In order to accurately incorporate the different levels of scientific data produced, the data integration system is comprised of two components: data archives and data integration.

The data archives component encompasses both raw and synthesized data. These data sets will be stored in a centralized location in the original formats presented by the individual projects. No data manipulation including formatting, standardizing, or merging will be done for, or within, this component of the data integration system. Access to these data, in their original form and content, will be provided upon request and approval from the Sanctuary Manager to researchers, managers, and the general public.

The data integration component incorporates the synthesized data, both tabular and geospatial. These data are to be integrated for incorporation into a geographic information system to facilitate further analysis by researchers and managers. The results data that are to be contained within the database integration system will be documented with project level metadata as well as attribute or parameter level metadata. Integration summaries will also be available within the integrated database.

Work Tasks

Obtain and Archive Raw Data Sets - FWRI will continue to work with each of the individual monitoring and research projects to obtain copies of their raw data sets for incorporation into the archive portion of the FKNMS data integration system.

Obtain Synthesized Data Sets - FWRI will continue to work with each of the individual monitoring and research projects to obtain copies of their synthesized data sets for incorporation into both the archives and CD-ROM distribution of the FKNMS data integration system.

Obtain Geographic and Ancillary Data Sets - FWRI will continue to build upon a continuing effort to acquire, automate and manage ancillary geo-spatial data to complement the FKNMS data integration system.

Update a web site that houses each long-term monitoring project's interpreted data, metadata, and ancillary information - FWRI will make all possible efforts to integrate the information into one robust geographic information system (GIS) database. FWRI will work with each of the principle investigators to make sure their data and analyses are correctly represented to reflect their research focus. Final reports created through the Special Projects will be added to the web site. While the web is the preferred method for providing data collected by the three monitoring projects and special projects, a CD or DVD with a copy of the web site will be made available upon request.

Serve Water Quality Data to Resource Managers via an Internet Map Service (IMS) - Staff will use mapping techniques to create information products for use by Resource Managers. The creation of an IMS will allow users to view spatially referenced data, create customized queries, design printable maps, and download GIS layers for use within a desktop GIS.

Upload WQPP data into STORET - FWRI will actively upload WQPP data into the latest version of STORET. Data collected by the Water Quality Monitoring Project will be uploaded on a semi-annual basis, while data collected by the Seagrass and Coral Reef Evaluation and Monitoring Projects will be uploaded on an annual basis. FWRI adjust the structure of WQPP data to make it compatible with STORET database structure.

Provide Technical Support - FWRI will provide technical support to each principle investigator and FKNMS personnel for all issues associated with the data management and integration system.

Reports and Presentations

Quarterly reports have and will be submitted. Power Point presentations and executive summaries will be provided for the WQPP Technical Advisory and Steering Committees as necessary and when requested by the EPA project officer. Annual Reports will be submitted. Project staff will address comments by EPA, the Technical Advisory Committee, the Steering committee and NOAA Coastal Ocean Program as requested.